Connecticut Department of
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Public Hearing – March 10, 2022
Housing Committee

Testimony Submitted by Commissioner Katie S. Dykes

Senate Bill No. 292 – An Act Concerning Heating Efficiency in New Residential Construction and Major Alterations of Residential Buildings

Thank you for the opportunity to present testimony regarding Senate Bill No. 292 – **An Act Concerning Heating Efficiency in New Residential Construction and Major Alterations of Residential Buildings**. The purpose of this bill is to direct the State Building Inspector and the Codes and Standards Committee, in its next expected update of the State Building Code no earlier than 2024, to prohibit the use of electric resistance or fossil fuel combustion systems as the primary source of space or water heating in new residential construction or major alterations of residential buildings. This prohibition would usher in the use of more energy efficient systems such as heat pumps.

The Department of Energy and Environmental Protection (DEEP) **supports** this bill as an important step toward reaching the greenhouse gas emission reduction goals in the Global Warming Solutions Act. As reported in DEEP's most recent Greenhouse Gas Inventory, the state is not on track to meet its 2030 and 2050 reduction targets,[1] and therefore, DEEP is interested in ramping up carbon reduction strategies across several sectors, including the residential building sector. This bill will also complement this session's Governor's bill, SB 10 An Act Concerning Climate Change Mitigation, by providing more concrete inputs for DEEP to plan for in its Integrated Resources Plan (IRP) modeling for a 100% zero carbon electric supply. DEEP modeled increased energy demand from building electrification in the 2020 IRP but was not able to base the pace of electrification on a specific policy.[2] This bill will increase accuracy in predicting future loads, thereby improving electric supply planning for a zero-carbon future.

Heat pumps represent the leading edge of building thermal decarbonization. These electrical appliances replace or displace conventional air conditioners as well as conventional boilers, furnaces, and water heaters. Instead of *producing* heat, as conventional boilers and furnaces do, they *harvest* heat either from the atmosphere or from soil and rock. Hence, they provide *renewable* thermal energy. And they do so with considerable efficiency. A cold-climate air-source heat pump typically operates 3-4 times more efficiently than an electric-resistance heater (and remains efficient even below 0 degrees); and a ground-source heat pump does so 5-7 times more efficiently. Unlike conventional appliances dependent on fossil fuels, a heat pump's already modest carbon footprint is destined to get smaller and smaller as the electricity supplied by the grid gets cleaner and cleaner. Heat pumps also can be paired with rooftop solar

[1] The 2018 Connecticut Greenhouse Gas Emissions Inventory, published by the Connecticut Department of Energy and Environmental Protection, page 2, available at https://portal.ct.gov/-/media/DEEP/climatechange/GHG_Emissions_Inventory_2018.pdf

[2] The 2020 IRP assumed that relative to the base case, the electrification load cases will have three times as many heat pumps by 2040 with the majority of conversions being electric resistance, oil, and propane heated homes.

photovoltaic systems and battery storage systems and have potential to engage in active demand-response programs.

Currently, the state's Codes and Standards committee is in the process of updating the State Building Code based on, among other codes, the 2021 International Energy Conservation Code (IECC). This code mandates improved building efficiency, requiring builders, architects, and engineers to choose an additional efficiency measure from a catalogue of options. The options mostly focus on improved air-sealing, insulation, lighting, and heating systems. Builders, for example, can select a more efficient heating, ventilation, and air-conditioning system (HVAC) to meet code (95% or greater AFUE and 16 SEER). Builders can install heat pumps to show compliance with the energy code, but they are not mandated under the code.

This bill would elevate the use of heat pumps from a discretionary energy efficiency tool to a mandatory requirement for new residential construction or major alterations when the State Building Code is next updated after 2024. Other jurisdictions have recently enacted or are considering similar measures that will phase out fossil fuel use in new construction. In December of 2021, the New York City Council passed legislation that sets carbon dioxide emission limits on buildings, effectively prohibiting fossil fuel space and water heating systems in new buildings-2027.[3] Washington State, following the lead of several of its cities' efforts to curb natural gas use in buildings, is considering a state building code change that would require heat pump space heating for all commercial buildings.[4] California has also taken statewide action after a number of its cities took measures to reduce fossil fuel use in buildings. In August of 2021, the California Energy Commission voted to approve the first statewide building code to include heat pumps as a baseline technology, effective January 2023.[5]

This proposal offers Connecticut the chance to join these jurisdictions as a leader in moving its building sector away from fossil fuel use. The state already has tools at its disposal to do so, including a variety of incentives offered through the Energize CT programs. New construction and major renovation projects can receive enhanced incentives for homes that pair high-performance thermal envelopes with efficient all-electric space and water heating equipment. There also are incentives to build to higher performance standards, such as the Passive House standard, that preclude the need for fossil fuel use.

Connecticut is currently preparing for this market transition by identifying and establishing workforce training programs and professional networks for both existing HVAC professionals and individuals interested in entering this field. Online training began being offered on Energize CT's e-learning portal for contractors in early 2021, and additional courses are under development that will be based on best practices in other states with ASHP deployment programs. Additionally, the Heat Pump Installer Network (HPIN) is expected to be launched this year which will include independent, licensed, and insured HVAC contractors who have met

[3] Local Laws of the City of New York for the Year 2021, No. 154, available at https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:a0069600-d025-3d9f-8ee8-e0313ca450c9.
[4] State Building Code Council, Washington State Energy Code Development Standard Energy Code Proposal Form, available at 2021 WA Code Change - Heat Pump Space Heating.pdf
[5] See the California Energy Commission 2022 Building Energy Efficiency Standards at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency.

minimum heat pump installation training requirements.[6] This network will benefit contractors by giving them access to rebates, marketing tools, networking opportunities, and additional trainings. DEEP recognizes that this industry is among the many trades and skills that will need significant investment to meet the goals of the state and is committed to developing a pipeline of skilled HVAC professionals to meet the requirement of this bill. Section 2 of the proposal will ensure that DEEP maintains these efforts in preparation for the next revision to the State Building Code, should this proposal pass.

Thank you for the opportunity to present testimony on this proposal. Should you have any questions, please do not hesitate to contact Harrison Nantz at Harrison.Nantz@ct.gov.

[6] BETP 29 ATTACHMENT 1
http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/8c9906744d48f122852587ab00524a63?OpenDocument